

CLAIMS

What is claimed is:

1. A configuration for a single-piece packaging container enclosing an object with an elevated end, comprising:
 - a preformed, rigid unit of generally U-shaped cross-section having a main body portion with a bottom wall and opposing side walls,
 - the unit forming three end closures for the packaging container, formed from first closure panels extending from and adjacent to both ends of the main body wherein one of the first closure panels side walls has a height about equal to the height of the main body side walls and another first closure panel side wall has a height approximately equal to a height of the elevated end of the object to be packaged, second closure panels extending from and adjacent to both ends of the first closure panels wherein the second closure panels have a length approximately half as long as the main body portion, and a third closure panel extending from and adjacent to the end of the second closure panel formed adjacent to the first closure panel that has a height approximately equal to the height of the elevated end of the object to be packaged, the main body and the first closure panels being separated from one another by first fold lines, the first closure panels and the second closure panels being separated from one another by second fold lines, the third closure panel and one of the second closure panels being separated from one another by a third fold line, the main body side walls having straight-cut corners at their junctures with the first closure panels and the first closure panels side walls having first straight-cut corners adjacent the main body, the first closure panels side walls having second straight-cut corners adjacent the second closure panels and the second closure panels side walls having first straight-cut corners adjacent the first closure panels, one of the second closure panels side walls having second straight-cut corners adjacent the third closure panel and the third closure panel having straight-cut corners adjacent one of the second closure panels, the first closure panels being configured for folding generally perpendicular to the main body bottom wall, the second closure panels being configured for insertion inside the main body side wall, folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall, and the third closure panel being configured for overlapping one of the second closure panels, folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall.

2. A configuration for a single-piece packaging container enclosing an object with an elevated mid-section, comprising:

a preformed, rigid unit of generally U-shaped cross-section having a main body portion with a bottom wall and opposing side walls,

the unit forming three end closures for the packaging container, formed from first closure panels extending from and adjacent to both ends of the main body wherein both first closure panels side walls have a height about equal to the height of the main body side walls, second closure panels extending from and adjacent to both ends of the first closure panels wherein one of the second closure panels side walls has a length slightly greater than half as long as the main body portion and another second closure panel side wall has a length approximately half as long as the main body portion, and third closure panels extending from and adjacent to both ends of the second closure panels, the main body and the first closure panels being separated from one another by first fold lines, the first closure panels and the second closure panels being separated from one another by second fold lines, the third closure panels and the second closure panels being separated from one another by third fold lines, the main body side walls having straight-cut corners at their junctures with the first closure panels and the first closure panels side walls having first straight-cut corners adjacent the main body, the first closure panels side walls having second straight-cut corners adjacent the second closure panels and the second closure panels side walls having first straight-cut corners adjacent the first closure panels, the second closure panels side walls having second straight-cut corners adjacent the third closure panels and the third closure panels having straight-cut corners adjacent the second closure panels, the first closure panels being configured for folding generally perpendicular to the main body bottom wall, the second closure panels being configured for insertion inside the main body side wall, folding generally at a 45 degree angle to the first closure panels and generally at a 45 degree angle to the main body bottom wall, and the third closure panels being configured for overlapping each other, folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall.

3. A configuration for a single-piece packaging container enclosing an object with random elevations, comprising:

a preformed, rigid unit of generally U-shaped cross-section having a main body portion with a bottom wall and opposing side walls, and with two sets of short slits with a height approximately half as high as the side walls cut into the side walls approximately at the main body portion's mid-point forming support wedges which are slightly deformed inward,

the unit forming two end closures for the packaging container, formed from first closure panels extending from and adjacent to both ends of the main body wherein both first closure panels side walls have a height approximately equal to a highest height of the randomly elevated object to be packaged, second closure panels extending from and adjacent to both ends of the first closure panels wherein the second closure panels have a length approximately half as long as the main body portion, the main body and the first closure panels being separated from one another by first fold lines, the first closure panels and the second closure panels being separated from one another by second fold lines, the main body side walls having straight-cut corners at their junctures with the first closure panels and the first closure panels side walls having first straight-cut corners adjacent the main body, the first closure panels side walls having second straight-cut corners adjacent the second closure panels and the second closure panels side walls having straight-cut corners adjacent the first closure panels, the first closure panel being configured for folding generally perpendicular to the main body bottom wall, the second closure panels being configured for insertion inside the main body side wall, folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall, and the short slits being slightly deformed inward, to provide support wedges for the second closure panels.

4. A configuration for a single piece packaging container enclosing two or more dissimilar objects which should be prevented from touching or intermixing during shipping, comprising:

a preformed, rigid unit of generally U-shaped cross-section having a main body portion with a bottom wall and opposing side walls,

the unit forming three end closures for the packaging container, formed from first closure panels extending from and adjacent to both ends of the main body wherein both first closure panels side walls have a height approximately equal to the height of the main body side walls, second closure panels extending from and

adjacent to both ends of the first closure panels wherein the combined lengths of the second closure panels are approximately equal to the length of the main body portion, and third closure panels extending from and adjacent to both ends of the second closure panels, the main body and the first closure panels being separated from one another by first fold lines, the first closure panels and the second closure panels being separated from one another by second fold lines, the third closure panels and the second closure panels being separated from one another by third fold lines, the main body side walls having straight-cut corners at their junctures with the first closure panels and the first closure panels side walls having first straight-cut corners adjacent the main body, the first closure panels side walls having second straight-cut corners adjacent the second closure panels and the second closure panels side walls having first straight-cut corners adjacent the first closure panels, the second closure panels side walls having second straight-cut corners adjacent the third closure panels and the third closure panels having straight-cut corners adjacent the second closure panels, the first closure panels being configured for folding generally perpendicular to the main body bottom wall, the second closure panels being configured for insertion inside the main body side wall, folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall, and the third closure panels being configured for insertion inside the second closure panels side walls, folding generally perpendicular to the main body bottom wall and generally parallel to the first closure panels, creating two separate compartments with a double-fold divider.

5. A configuration for a single piece packaging container enclosing two or more dissimilar objects, which should be prevented from touching or intermixing during shipping, wherein one end encloses an object with an elevated mid-section, and another end encloses an object with an elevated end, comprising:

a preformed, rigid unit of generally U-shaped cross-section having a main body portion with a bottom wall and opposing side walls,

the unit forming two end closure sides for the packaging container,

the first side formed from a first closure panel extending from and adjacent a first end of the main body wherein the first closure panels side walls have a height approximately equal to a height of the elevated end of one of the objects to be packaged, a second closure panel extending from and adjacent to the end of the first closure panel, a third closure panel extending from and adjacent to the end of the

second closure panel, and a fourth closure panel extending from and adjacent to the end of the third closure panel, the main body and the first closure panel being separated from one another by a first fold line, the first closure panel and the second closure panel being separated from one another by a second fold line, the third closure panel the second closure panel being separated from one another by a third fold line and the fourth closure panel and the third closure panel being separated from one another by a fourth fold line, the main body side walls having straight-cut corners at their junctures with the first closure panel and the first closure panel side walls having first straight-cut corners adjacent the main body, the first closure panel side walls having second straight-cut corners adjacent the second closure panel and the second closure panel side walls having first straight-cut corners adjacent the first closure panel, the second closure panel side walls having second straight-cut corners adjacent the third closure panel and the third closure panel having first straight-cut corners adjacent the second closure panel, the third closure panel side walls having second straight-cut corners adjacent the fourth closure panel and the fourth closure panel having straight-cut corners adjacent the third closure panel, the first closure panel being configured for folding generally perpendicular to the main body bottom wall, the second closure panel being configured for folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall, the third closure panel being configured for insertion inside the main body side wall, folding generally at a 45 degree angle to the first closure panel and generally at a 45 degree angle to the main body bottom wall, and the fourth closure panel being configured for insertion inside the third closure panel side walls, folding generally perpendicular to the main body portion and generally parallel to the first closure panel, creating a separate compartment with a folded divider, and

the second side formed from a first closure panel extending from and adjacent a second end of the main body wherein both first closure panel side walls have a height about equal to the height of the main body side walls, a second closure panels extending from and adjacent to the end of the first closure panel, a third closure panel extending from and adjacent to the end of the second closure panel, a fourth closure panel extending from and adjacent to the end of the third closure panel, and a fifth closure panel extending from and adjacent to the end of the fourth closure panel, the main body and the first closure panel being separated from one another by a first fold line, the first closure panel and the second closure panel being separated from one

another by a second fold line, the third closure panel and the second closure panel being separated from one another by a third fold line, the fourth closure panel and the third closure panel being separated from one another by a fourth fold line, and the fifth closure panel and the fourth closure panel being separated from one another by a fifth fold line, the main body side walls having straight-cut corners at their junctures with the first closure panel and the first closure panel side walls having first straight-cut corners adjacent the main body, the first closure panel side walls having second straight-cut corners adjacent the second closure panel and the second closure panel side walls having first straight-cut corners adjacent the first closure panel, the second closure panel side walls having second straight-cut corners adjacent the third closure panel and the third closure panel having first straight-cut corners adjacent the second closure panel, the third closure panel side walls having second straight-cut corners adjacent the fourth closure panel and the fourth closure panel having first straight-cut corners adjacent the third closure panel, and the fourth closure panel side walls having second straight-cut corners adjacent the fifth closure panel and the fifth closure panel having straight-cut corners adjacent the fourth closure panel, the first closure panel being configured for folding generally perpendicular to the main body bottom wall, the second closure panel being configured for folding generally at a 45 degree angle to the first closure panel and generally at a 45 degree angle to the main body bottom wall, the third closure panels being configured for folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall, the fourth closure panel being configured for insertion inside the main body side wall, folding generally at a 45 degree angle to the first closure panel and generally at a 45 degree angle to the main body bottom wall, and the fifth closure panel being configured for insertion inside the fourth closure panel side walls, folding generally perpendicular to the main body portion and generally parallel to the first closure panel, creating another separate compartment with a folded divider.

6. A configuration for a single-piece packaging container having a seamless appearance and configured for enclosing one or more objects, comprising:
 - a preformed, rigid unit of U-shaped cross-section having a main body portion with a bottom wall and opposing side walls,
 - the unit forming two end closures for the packaging container, formed from first closure panels extending from and adjacent to both ends of the main body

wherein both first closure panels side walls have a height approximately equal to the height of the main body side walls, second closure panels extending from and adjacent to both ends of the first closure panels wherein a length of one of the second closure panels is about equal to a length of the main body portion, the main body and the first closure panels being separated from one another by first fold lines, the first closure panels and the second closure panels being separated from one another by second fold lines, the main body side walls having straight-cut corners at their junctures with the first closure panels and the first closure panels side walls having first straight-cut corners adjacent the main body, the first closure panels side walls having second straight-cut corners adjacent the second closure panels and the second closure panels side walls having straight-cut corners adjacent the first closure panels, the first closure panels being configured for folding generally perpendicular to the main body bottom wall, the second closure panels being configured for insertion inside the main body side wall, folding generally perpendicular to the first closure panels and generally parallel to the main body bottom wall.

7. A cutting device for forming cuts in a packaging container of the type having a preformed, rigid unit of generally U-shaped cross-section having a main body portion with a top or bottom wall and opposing side walls, the cutter comprising:

- a frame;

- a container support having opposing sides, the sides each having a groove channel formed therein;

- a sliding carriage having opposing sides disposed adjacent and outwardly of the opposing sides of the container support; and

- a cutter assembly associated with and mounted to each of the sliding carriage opposing sides, the cutter assemblies each having a cutting blade,

wherein the sliding carriage is movable toward and away from the container support, and wherein the channels in the container support are configured to accommodate the cutting blades as the carriage is moved toward the container, the cutting blades positioned so as to form cuts in the container side walls.

8. The cutting device in accordance with claim 7 wherein the container support includes a top wall having a ridge formed therein and a wherein the carriage

includes an upper plate having a groove formed therein corresponding to the top wall groove, and wherein when the carriage is moved toward the container to move the cutting blades through the container side walls, the container top or bottom wall, positioned on the support top wall is compressed between the container support top wall and the carriage upper plate to form an embossing therein.

9. The cutting device in accordance with claim 8 wherein the container support ridge is formed extending generally between the support side wall grooves.

10. The cutting device in accordance with claim 7 including holding pins for engaging the container side walls as the cutting blades contact the container side walls.

11. The cutting device in accordance with claim 7 including a drive for moving the sliding carriage toward and away from the container support, the drive including a pneumatic cylinder.

12. The cutting device in accordance with claim 10 wherein the holding pins are pneumatically actuated.